NOTES ON GALL-MAKING COCCIDS, WITH DESCRIPTIONS OF NEW SPECIES.

By Walter W. Froggatt, F.L.S.

(Plates xii-xiii.)

[Read 28th August, 1929.]

Since my Descriptive Catalogue of the Scale Insects (Coccidae) of Australia was issued in 1921, I have collected a large number of new species of Coccids upon our native trees, and noted new host plants of others previously recorded. I have also had other specimens from correspondents in different parts of the Commonwealth, either new species, or examples extending the range of previously described species.

In these notes I deal with some of the gall-making species.

Apiomorpha macqueeni, n. sp. Plate xii.

I am indebted to Mr. John Macqueen of Mt. Emlyn, Millmerran, Queensland, for a fine series of this species formed upon the branchlets of the narrow-leaved Ironbark (*Eucalyptus pilligaensis*).

The ♂ gall unknown.

The ♀ gall very variable in form, as is shown in the accompanying plate (Plate xii), the outer bark-like surface sometimes forming a fringe of ragged filaments round the bare summit.

Female galls varying from dark reddish-brown to light brown in colour. Variable in form, general form fig-shaped; base broad, rounded, swelling out on the sides, contracted near the apex, which in immature forms is surrounded with a serrate edge; the summit smooth, slightly convex; the centre produced into a slender cone surrounding the minute circular apical orifice. Height 1½ inches. A cross-section shows a solid woody mass, with a very small spindle-shaped chamber through the centre. Immature galls stalked, spindle-shaped, sometimes rounded at the apex, at others truncate.

Female coccid resting head downward in the central chamber. General colour yellowish-brown, legs and antennae reddish-brown, tarsi and anal appendages black. Length 1 inch; width at base of cephalic segment, 2 lines. Cephalic portion rounded at apex, with thoracic, and first six abdominal segments turbinate; the last three abdominal segments forming a slender tube, tapering slightly to the extremity, which bears a pair of large blunt finger-like anal appendages. The cephalic portion lightly clothed with fine scattered hairs; abdominal segments with longer hairs. The characteristic bands of stout spines, found on the abdominal segments in most species of this genus, are wanting.

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On the Lower Murray River near Euston, New South Wales, last October (1928) I found several large specimens of Red Box (*Eucalyptus bicolor*) so

thickly covered with the hard woody galls of this Coccid, that each branchlet was aborted into a gouty swelling or an oval mass. There were countless thousands of the female galls on each tree. Yet the male gall is unknown.

Opisthoscelis convexa, n. sp.

This species has a wide range. I have specimens from Mr. C. French, Jr., collected at Diamond Creek, Victoria, upon a Stringybark (*Eucalyptus macrorrhyncha*); others collected by Mr. L. Gallard at Gosford, N.S.W., on an undetermined species of *Eucalyptus*. I have taken it upon Ironbark (*Eucalyptus* sp.) in Why Why Forest, Macksville, and on a similar Ironbark at Warrah, New South Wales.

Male galls scattered over the surface of the leaves; small, reddish-brown, tubular structures with the apices fringed with serrate projections. Height 2 mm.

Female galls produced upon the base of the leaf stalks or along the slender branchlets. The basal portion brown; general form circular, broadest at the base, with apical portion forming a slightly convex, smooth, yellowish-brown lid. This lid is encircled by a scar or suture; the apical orifice, keyhole-shaped, in the centre of apical lid, is surrounded with a fine ring. Height 3½ mm.; breadth 4 mm.

Female coccid reddish-brown; cephalic portion darkest. Length 2 mm.; breadth, 3½ mm. General form, viewed from above, heart-shaped; the cephalic portion striated, forming a rounded pad fitting closely to the bottom of the gall-chamber; the rostrum aborted, situated between two rounded plates. The thoracic segments swelling out in folds on either side; the third thoracic segment bearing a pair of very long legs, folded on either side and turned over the dorsal surface; the femora stout, tibia and tarsi very long, slender, cylindrical, the latter terminating in a blunt tip. The abdominal segments rounded on the dorsal surface, segmental divisions well defined, each covered with blunt thorn-like spines which form transverse bars down the centre to the rounded apex, smaller spines scattered over the dorsal surface.

Opisthoscelis globosa, n. sp. Plate xiii, fig. 2.

This species differs from *Opisthoscelis convexa* chiefly in the larger size and swollen form of the female gall. I have specimens from Mr. C. French, Jr., from Victoria, on an undetermined species of *Eucalyptus*, and others from Hornsby, N.S.W.

Male galls on surface of leaves, tubular, apex closed in immature specimens; in fully developed galls apex open but margin not serrate. Height 2 mm.

Female galls formed on the smaller branchlets, a broadly rounded or oval mass at junction with branchlet, 9 mm. at base. Height 5 mm. The apical portion similar in general form to that of the previous species, but the lid dark brown, flattened or depressed, with the surrounding scar much deeper, and the whole surface roughened.

Female coccid dark brown, similar in general form to *Opisthoscelis convexa* but broader, with the depression between the thoracic segments when viewed from above deeper. Length 3½ mm.; breadth 3 mm. The spines upon the abdominal segments form transverse bands much more irregular than in the previous species, with the rest of the surface of the segments studded with smaller shorter spines or tubercles. Derm showing no other distinctive pores.

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OPISTHOSCELIS MASKELLI Froggatt. Plate xiii, figs. 1, 4.

The type species were described from specimens collected on the foliage and branchlets of the Large-leaved Ironbark (*Eucalyptus siderophloia*) growing about Flemington, near Sydney.

I have specimens from Mr. C. French, Jr., collected at Ashburton, Victoria, on *Eucalyptus melliodora*. The range of this species is extended to Southern Queensland. I have a very fine series in all stages of development upon the foliage and twigs of the Bimble Box, *Eucalyptus populifolia*, collected by Mr. I. Macqueen at Millmerran.

OPISTHOSCELIS RECURVA, n. sp. Plate xiii, fig. 3.

I collected these galls upon the foliage of an undetermined species of *Eucalyptus* on the hills at Warrah Station, near Willowtree, N.S.W.

Male galls of the usual tubular form, produced upon the surface of the leaves; tips slightly crenulated. Height 3 mm.

Female galls brown, the basal portion forming a circular platform upon the twig, divided from the base of the true gall by a contracted reddish scar, which is broadest at the base, rounded, and tapering to the apex which curves sharply downward like the beak of a parrot; tip truncate, with oval apical orifice. Diameter at base 9 mm.; height 9 mm.

Female coccid chocolate-brown, dorsal surface shining, flattened, broadly oval; the ventral surface convex, fitting closely into the bottom of the gall chamber; the tip of the abdomen forming a projecting lobe, turned up over the back; the long slender legs folded over the back, resting along the outer margins. When treated with potash, the cephalic portion is truncated in front, the sides of the thoracic segments very slightly rounded; the abdominal segments narrowing to the anal lobe. Antennae dark brown, stout, of uniform thickness to pointed tip, six-jointed. Beak chitinous, short, round at tip; first two pairs of legs wanting, no trace of them on derm; hind pair of legs abnormally developed, femora broad at base, tapering to apex; tibia and tarsus long, slender, tubular, the latter five times the length of the tibia, including the long tarsal joint rounded at the tip. The derm with four groups of dark brown, opaque, dermal cells round the antennae, first and second thoracic segments with two patches of similar cells on either side, third with a smaller patch near the base of the femora of the hind legs; the thoracic segmental division and first two abdominal segments marked off with a slender dark brown chitinous band; the whole of the derm covered with scattered groups of circular yellow pores varying in number from a dozen or more to three in each group. Length 5 mm.; breadth 4 mm.; length of hind leg 9 mm.

SPHAEROCOCCUS LEAI Fuller.

This beautiful little gall coccid was described by Fuller from specimens he collected near Perth, Western Australia, upon an undetermined species of *Casuarina*. A fine wood block is given of the galls in my Catalogue (Part iii, 1921, p. 11). In 1920 I found the galls plentiful at Trangie, N.S.W., upon the branchlets of the "Belah" (*Casuarina Cambagei*). Last year I found them upon the "Bull Oak" (*Casuarina Luehmanni*) growing on the red cliffs of the Murray River near Robinvale, Victoria.

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Maskellia globosa Fuller.

Fuller (*Agric. Gazette N.S.W.*, 1897) defined the genus *Maskellia* as what he called a gall-making dicuspid coccid. This coccid has a very wide range and infests a number of different species of Eucalypt. It is not uncommon about Sydney and sometimes transforms the young foliage into a mass of tangled matted branchlets and aborted foliage a foot or more in diameter. The male galls are little red horns or spines upon the surface of the leaves, the female coccids turning the branchlets into cylindrical, or oval swellings each with a little nipple above the hidden coccid. Finally, as the coccids mature, this becomes a dead branch. In a box swamp on the Murray River, near Robinvale, Victoria, I observed two large Red Box trees (*Eucalyptus bicolor*) with the tips of every drooping branchlet aborted into small masses of these characteristic galls, which gave the trees a remarkable appearance.

EXPLANATION OF PLATES XII-XIII.

Plate xii.

Apiomorpha macqueeni, n. sp.

Showing foliage of *Eucalyptus pilligaensis* and the different forms of the galls formed by *Apiomorpha macqueeni*. The short broad form in the right hand corner is the adult female gall.

Plate xiii.

Fig. 1.—*Opisthoscelis maskelli*, showing all forms of development of the galls on twigs and foliage.
Fig. 2.—*Opisthoscelis globosa*, n. sp. Male and female galls.
Fig. 3.—*Opisthoscelis recurva*, n. sp. Male and female galls.
Fig. 4.—*Opisthoscelis maskelli*. Adult galls.

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